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ENTOMOLOGY AT THE AGENTS' MEETING

The eleventh annual conference of the county demonstration agents was held at the University from September 7 to 14. There were four scheduled talks on entomological subjects and much discussion during committee meetings, laboratory and informal conferences.

Mr. W. W. Yothers outlined the life history of the rust mite. At least 90% of them complete their life cycle, from egg to egg in nine days. Exposure to sulphur kills them in fifteen seconds.

A very live topic was that of dusting citrus trees for the control of rust mite. Mr. DeBusk spoke of the results of some dusting done in his county in cooperation with the Experiment Station. The control on the dusted plots was as good as on the sprayed plots and the cost was only about one fourth that of spraying. Mr. Kime thought it might be necessary to dust two or three times to secure as good a control as with spraying. Other agents spoke of the satisfactory results of dusting in their counties. Of even more importance than the cheapness of dusting as compared with spraying is the rapidity of the operation. In large groves, even tho spraying may be started at the first sign of danger, much damage may be done before the entire grove can be covered. Another point which might have been mentioned is that of safety. Much fruit was burned last year as a result of spraying during hot weather. Mr. Yothers reported as good results from the use of straight flowers of sulphur as with the mixture of sulphur and lime.

Mr. Yothers spoke of the work done at his laboratory on the entomogenous fungi by Dr. Spear. He came to the conclusion that the Red Aschersonia was spread mostly by the whitefly crawlers. This points strongly to the conclusion that the best

time to apply the fungus is when the maximum number of crawlers are out, i. e. about a week after the culmination of the June flight of adults. The yellow aschersonia, however, should accordingly, be applied about the middle of July. The same principle applies to the scale-infesting fungi. They should be sprayed on the trees when the maximum number of scale crawlers are out.

Mr. A. C. Brown spoke on sweet-potato certification.

The committee on truck crops reported the control of aphids to be one of their most serious problems.

RELATION OF ENVIRONMENTAL FACTORS TO WING DEVELOPMENT IN APHIDS[1]

By ARTHUR C. MASON

The generally accepted theory of most entomologists and experimenters on the subject is that winged forms of aphids are produced only when the continued existence of the apterous forms, under conditions then existing, might prove disastrous to the species. This occurs always in the fall in cold climates when sexual forms are produced, the males of which are usually winged, and also at any migrating season in the case of those species which live on two or more different host plants. There are also many other causes attributed to these adaptive variations. Among the factors which may be potent in acting as effective stimuli for wing formation are crowding on the host and hence lessening of the food supply, unusually high or low humidity, early lowering of temperature in autumn, changing constitution of the sap of the plants by chemical means, etc.

In collecting aphids it was noted that usually both winged and apterous forms occurred in the same colony; also, in the life history work with *Myzus persicae,* that some of them would be winged and others apterous. In several cases plant lice which were apterous when collected would develop wings when kept in the laboratory for a day or two. The question often arose as to why some of these forms were winged and some apterous when living under the same conditions, and as to whether the environment of the aphids in the breeding jars had an effect on this. Hence a series of experiments was planned to prove or disprove some of these theories.

[1]A synopsis of Part III of thesis entitled "Systematic and Biological Studies of Some Florida Aphididae", presented by the writer in 1915 to the University of Florida for the degree of Master of Science. This is the third and concluding paper of the series.